

a very large iceberg; s. s. "Jersey City," in N. 43° 00', W. 50° 20', passed three icebergs.

26th.—S. S. "Katie," in N. 42° 26', W. 50° 26', passed several icebergs.

27th.—S. S. "Iowa," in N. 41° 42', W. 47° 51', passed a large iceberg.

29th.—S. S. "Devon," at New York reported, in N. 44° 00', W. 46° 10', saw three icebergs.

30th.—Ship "Jas. Drummond," in N. 43°, W. 51°, passed a large iceberg.

No date.—Bark "Dronning Sophie," from N. 48°, W. 43°, to N. 43°, W. 53°, passed numerous icebergs; ship "Thos. Rand," in N. 41° 46', W. 49° 29', passed a very large iceberg.

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature over the United States and Canada, for the month of April, 1883, is exhibited on chart iii., by the dotted isothermal lines.

The general distribution of mean temperature during April, and the districts of maximum departures from the April normal of each year, beginning with 1873, are as follows:

Year.	Districts.	Max. departures from normal.	Remarks.
1873		0	The temperature was from 3° to 8° below the normal at stations from Kansas and Missouri to Minnesota; from 0° to 5° below in the middle Atlantic states and lake region; from 0° to 3° below in New England and from Kentucky to the Gulf; about normal in the south Atlantic states.
1874	Upper Mississippi valley	-11.5	Below the normal in all districts, except in the south Atlantic states.
	Lower Mississippi valley	-8.4	
	South Atlantic states	+1.1	
	Middle Atlantic states	-6.8	
	Saint Lawrence valley	-6.6	
1875	Lower lakes	-4.4	Month unusually cold in all districts east of the Rocky mountains; temperature above the normal on the Pacific coast.
	Pacific coast	+2.6	
1876	Upper lakes	+2.5	Slightly below the normal on the Atlantic coast, in the lower lake region and Saint Lawrence valley; slightly above the normal in the Gulf states, the upper lake region, and in the Missouri and Ohio valleys; normal in the upper Mississippi valley.
	Missouri valley	+1.5	
	Lower lakes	-1.5	
	Pacific coast	-1.4	
	New England	-1.3	Normal on the Pacific coast and in the Gulf states; slightly below the normal in the south Atlantic states; above the normal in the other districts, the departures being most marked from the upper Missouri valley to New England.
1877	New England	+4.5	
	Lake region	+3.4	
	Upper Missouri valley	+3.1	
	South Atlantic states	-0.8	Month generally warm in all parts of the country. The greatest departures from the normal temperature occurred from the upper Missouri valley to New England. Over the Southern states and on the Pacific coast the departures are small.
1878	Upper lakes	+10.5	
	Lower lakes	+10.8	
	Minnesota	+9.1	
	Upper Missouri valley	+9.0	
	New England	+8.1	Above the normal in all districts west of the Mississippi river, except in Arizona; below the normal east of the Mississippi, except normal in the upper lake region.
1879	Northern slope	+6.0	
	Missouri valley	+5.1	
	Saint Lawrence valley	+2.9	
	Florida	-2.0	Above the normal from Texas and the Mississippi valley eastward, except in the Saint Lawrence valley and the Canadian maritime provinces; below the normal west of the Mississippi, except in Texas and the middle slope.
1880	Middle Atlantic states	+4.0	
	Eastern Gulf	+3.8	
	Western Gulf	+3.6	
	Missouri valley	+3.2	
	Middle Pacific coast	-3.0	Above the normal from the eastern Rocky mountain slope to the Pacific coast; below the normal in all other districts, except normal in the west Gulf states.
	Saint Lawrence valley	-2.0	
1881	Missouri valley	-3.6	
	Minnesota	-3.4	
	Upper lakes	-2.9	
	Upper Mississippi valley	-2.9	Above the normal over the southern slope, the Missouri valley, and from the Mississippi eastward, except slightly below in New England; below the normal over the northern and middle slopes and west of the Rocky mountains.
	South Atlantic states	-3.5	
	North Pacific coast	+4.0	
	Southern plateau	+4.6	
	Middle Pacific coast	+3.6	
1882	Eastern Gulf	+3.2	
	Tennessee	+2.8	
	Florida	+2.6	
	Middle plateau	-4.7	
	Middle Pacific coast	-3.4	
	North Pacific coast	-3.1	

The mean temperature of the month over the United States, as a whole, differs but slightly from the April normal, as determined from the records of the Signal Service. From the eastern Rocky mountain slope westward to the Pacific coast the

mean temperature is from less than 1° below the normal in the northern and middle slopes to 4° below the normal in the middle plateau. In the lower lake region, the middle and south Atlantic states the mean temperature is also slightly below the normal, the departures being 1° to 3° in the lower lake region, and less than 1° in the last-named districts. From the Gulf of Mexico to the northern boundary of the United States and in New England the mean temperature of the month is above the normal. Over this extended area the departure from the normal temperature is greatest in the Missouri valley, where it is 2° to 6°. In the extreme northwest, Tennessee, the upper Mississippi valley and in Florida the departures are 1° to 2°, 1° to 3°, 1° to 4° and 1° to 7° above the normal respectively. In the Gulf states, Ohio valley, upper lake region and in New England the departures above the normal are less than 1°.

The following are some of the extreme monthly mean temperatures reported from Signal-Service stations:

Stations reporting highest.	Stations reporting lowest.
Key West, Florida..... 79.2	Pike's Peak, Colorado..... 12.1
Rio Grande City, Texas..... 77.9	Mount Washington, New Hampshire..... 20.0
Punta Rassa, Florida..... 75.1	Saint Vincent, Minnesota..... 34.0
Brownsville, Texas..... 74.3	Alpena, Michigan..... 35.1
Eagle Pass, Texas..... 73.7	Mackinaw City, Michigan..... 35.9
Cedar Keys, Florida..... 72.6	Escanaba, Michigan..... 36.2
Sanford, Florida..... 71.8	Marquette, Michigan..... 36.5
New Orleans, Louisiana..... 71.4	Cheyenne, Wyoming..... 37.1
Indianola, Texas..... 71.3	Eastport, Maine..... 38.0
Galveston, Texas..... 70.6	Fort Stevenson, Dakota..... 38.0

In the first column of the following table is shown the mean temperature of April in previous years for the several districts, as determined from observations made at the Signal Service stations; the second column shows the mean temperature of April, 1883, and the third column shows the departure of April, 1883, from the normal.

Average Temperatures for April, 1883.

Districts.	Average for April. Signal Service observations.		Comparison of April, 1883, with the average for several years.
	For several years.	For 1883.	
New England.....	43.2	43.5	0.3 above.
Middle Atlantic states.....	50.6	50.1	0.5 below.
South Atlantic states.....	62.0	61.7	0.3 below.
Florida peninsula.....	72.4	74.2	1.8 above.
Eastern Gulf.....	65.5	66.3	0.8 above.
Western Gulf.....	66.9	67.4	0.5 above.
Rio Grande valley.....	72.8	73.1	0.3 above.
Tennessee.....	59.6	60.9	1.3 above.
Ohio valley.....	53.7	54.4	0.7 above.
Lower lakes.....	42.9	41.6	1.3 below.
Upper lakes.....	39.5	40.1	0.6 above.
Extreme northwest.....	37.3	38.5	1.2 above.
Upper Mississippi valley.....	50.9	52.3	1.4 above.
Missouri valley.....	48.2	50.8	2.6 above.
Northern slope.....	43.5	43.4	0.1 below.
Middle slope.....	51.6	50.7	0.9 below.
Southern slope.....	64.8	62.2	2.6 below.
Northern plateau.....	48.3	45.5	2.8 below.
Middle plateau.....	48.5	43.9	4.6 below.
Southern plateau.....	59.4	56.3	3.1 below.
North Pacific.....	50.2	48.2	2.0 below.
Middle Pacific.....	57.7	54.9	2.8 below.
South Pacific.....	61.7	59.6	2.1 below.
Mount Washington, N. H.....	20.6	20.0	0.6 below.
Pike's Peak, Colo.....	13.1	12.1	1.0 below.

DEVIATIONS FROM MEAN TEMPERATURE.

The departures exhibited by the reports from the regular Signal-Service stations are shown in the table of average temperatures for April, 1883.

The Chief Signal Officer is indebted to voluntary observers for the following notes upon this subject. As some of these comparisons are made with the averages determined from records covering periods extending back many years before the establishment of the Signal Service, they will be found of special interest.

Illinois.—Riley: mean temperature 44° 9, is 0° 8 above the April average of the past twenty-two years.

Anna: mean temperature 58° 3, is 0° 4 above the April average of eight years.

Indiana.—Vevay: mean temperature $57^{\circ}.4$, is $1^{\circ}.2$ above the April average of seventeen years.

Wabash: mean temperature $50^{\circ}.5$, is $0^{\circ}.2$ above the April average of seven years.

Kansas.—Lawrence: mean temperature $57^{\circ}.2$, which is $3^{\circ}.2$ above the April average of fifteen years.

Wellington: mean temperature $54^{\circ}.1$, is $2^{\circ}.9$ below the April average of the last four years.

Clay Centre: mean temperature $56^{\circ}.6$, is $1^{\circ}.4$ above the April mean of the last three years.

Maine.—Gardiner: mean temperature $39^{\circ}.7$, is $1^{\circ}.6$ below the April average of forty-seven years.

Maryland.—Fallston: mean temperature $48^{\circ}.7$, is $1^{\circ}.1$ below the April average of the last twelve years.

Sandy Springs: mean temperature $48^{\circ}.9$, or the coldest April since 1875.

Table of Comparative Maximum Temperatures for the Month of April.

State or Territory.	Maximum for April, 1883, Signal Service.		Highest since Signal-Service stations were opened—3 to 12 years.			Highest from any other source.			
	Station.	Temp.	Station.	Temp.	Year.	Place.	Temp.	Year.	Length of Record.
Alabama	Mobile	90	Mobile	90	1881	Mount Vernon Arsenal	95		34 years
Do	Montgomery	88	Montgomery	90	1880				
Arizona	Phoenix	99	Yuma	105	1876	Fort Lowell	109	1879	12 "
Do	Fort Apache	78	Phoenix	105	1881	Fort McDonald	106	1879	14 "
Arkansas	Fort Smith	88	Little Rock	94	1880	Fort Smith	96		21 "
Do						Mount Ida	95	1880	8 "
California	Los Angeles	89	Campo	94	1876	Fort Yuma	100		31 "
Do	Visalia	81	Los Angeles	94	1881				
Colorado	West Las Animas	82	Denver	83	1874	Fort Lyon	98		21 "
Do	Denver	73	West Las Animas	83	1882				
Connecticut	New London	66	New Haven	75	1880	New Haven	85		86 "
Do	New Haven	64	New London	74	1880	Middletown	85		11 "
Dakota	Huron	79	Fort Buford	92	1881	Fort Sully	98		17 "
Do	Fort Stevenson	74	Fort Sully	93	1874	Fort Randall	95		23 "
Delaware	Delaware Breakwater	67	Delaware Breakwater	89	1880	Fort Delaware	85		45 "
Dist. of Columbia	Washington	90	Washington	91	73, '80	Washington	91		49 "
Florida	Cedar Keys	70	Jacksonville	91	74, '80	Okahumpka	99	1880	4 "
Do	Sanford	90	Key West	91	1881	Fort King	94		10 "
Georgia	Augusta	87	Augusta	90	1880	Augusta Arsenal	94		50 "
Do	Atlanta	83	Savannah	89	1873	Savannah	94		37 "
Idaho	Lewiston	74	Lewiston	86	1880	Fort Lapwai	85		19 "
Illinois	Springfield	85	Cairo	84	1873	Rock Island Arsenal	89		11 "
Do	Chicago	78	Chicago	83	1873	Chicago	84		38 "
Indiana	Indianapolis	85	Indianapolis	83	1880	Vevay	97		14 "
Indian Territory	Fort Reno	91	Fort Sill	96	1880	Fort Sill	97		19 "
Do	Fort Supply	90	Fort Gibson	93	1881				
Iowa	Des Moines	89	Des Moines	84	79, '80	Iowa City	90		15 "
Do	Dubuque	80	Dubuque	84	1879	Glenwood	92	1880	2 "
Kansas	Leavenworth	86	Leavenworth	89	1880	Fort Leavenworth	102		52 "
Do			Dodge City	92	1880	Fort Larned	95		18 "
Kentucky	Louisville	88	Louisville	87	73, '80	Newport Barracks	89		30 "
Louisiana	Shreveport	92	New Orleans	85	1879	Fort Jessup	98		23 "
Do	New Orleans	84	Shreveport	93	80, '82	Fort Rouge	96		58 "
Maine	Portland	66	Eastport	63	1877	Fort Preble	90		60 "
Do	Eastport	60	Portland	78	1881				
Maryland	Baltimore	74	Baltimore	84	1881	Fort Washington	93		38 "
Do	Ocean City	74							
Massachusetts	Boston	74	Boston	80	1881	Williamstown	87		62 "
Do	Provincetown	60	Springfield	79	1881				
Michigan	Port Huron	81	Port Huron	79	1881	Fort Gratiot	94		22 "
Do	Alpena	65	Marquette	81	1877				
Minnesota	Moorhead	74	Saint Paul	82	79, '82	Fort Ridgely	90		11 "
Do	Saint Paul	74	Breckenridge	80	1880	Fort Snelling	88		61 "
Mississippi	Vicksburg	86	Vicksburg	90	1881	Columbus	86		10 "
Do	Starkville	85				Fayette	89	1880	7 "
Missouri	Stunt Louis	88	Saint Louis	87	1881	Jefferson Barracks	94		30 "
Do			Springfield	89	1882	Corning	94	1880	7 "
Montana	Glendive	82	Fort Custer	85	1881	Fort Shaw	93		13 "
Do	Fort Shaw	68	Fort Keogh	90	1881				
Nebraska	Omaha	88	North Platte	92	1880	Fort McPherson	95		8 "
Do	North Platte	79	Omaha	89	1880	Omaha	95		3 "
Nevada	Pioche	68	Pioche	86	1879	Fort McDermitt	90	1881	16 "
Do			Winnemucca	79	1881				
New Hampshire	Mount Washington	50	Mount Washington	49	1877	Concord	88		8 "
Do						Dartmouth College	86		18 "
New Jersey	Little Egg Harbor	69	Atlantic City	79	1878	Vineland	88	1881	7 "
Do	Sandy Hook	68	Barnegat City	79	1880	Burnt Mills	88	1877	3 "
New Mexico	Fort Bayard	75	Fort Craig	97	1879	Fort Craig	104		25 "
Do	Santa Fe	69	La Mesilla	100	1879				
New York	Rochester	84	New York City	81	1877	Fort Niagara	94		54 "
Do	Oswego	76	Albany	80	1881	Ithaca	98		30 "
North Carolina	Sloop Point	84	Wilmington	92	1873	Fort Johnson	88		57 "
Do	Charlotte	82	Charlotte	85	80, '81	Weldon	90	78, '80	8 "
Ohio	Columbus	86	Cincinnati	85	1873	Cincinnati	93		36 "
Do	Cleveland	85	Columbus	83	1881	Marietta	90		53 "
Oregon	Portland	74	Umatilla	89	1880	Fort Dallas	90		15 "
Do			Portland	85	1880	Fort Haskins	90		8 "
Pennsylvania	Erie	86	Pittsburg	88	1878	Philadelphia	88		120 "
Do	Pittsburg	86	Philadelphia	82	1881	Carlisle Barracks	88		35 "
Rhode Island	Block Island	66	Newport	70	1877	Providence	82		35 "
Do	Narragansett Pier	66							
South Carolina	Charleston	82	Charleston	86	1873	Fort Moultrie	89		38 "
Do						Charleston	88		105 "
Tennessee	Memphis	88	Memphis	87	73, '80, '81	Ashwood	89	1880	3 "
Do	Nashville	88	Chattanooga	88	80, '82	Glenwood Cottage	89		11 "
Texas	Eagle Pass	101	Rio Grande City	109	1878	Fort Ringgold	114	1878	32 "
Do	Rio Grande City	101	Eagle Pass	105	1880	Fort McIntosh	108		27 "
Utah	Salt Lake City	72	Salt Lake City	83	1874	Kanab	88	1875	5 "
Do						Fort Crittenden	85		3 "
Vermont			Burlington	75	1881	Lunenburg	78		17 "
Do						Woodstock	78	1881	8 "
Virginia	Norfolk	80	Norfolk	89	1881	Accotink	96	1881	7 "
Do	Fort Myer	77	Lynchburg	91.5	1873	Fortress Monroe	91		55 "
Washington	Pomeroy	72	Olympia	82	1880	Fort Walla Walla	96		14 "
Do	Dayton	74	Dayton	91	1880				
West Virginia			Morgantown	89	1878				
Do						Wellsburg	88	1879	2 "
Wisconsin	Milwaukee	75	La Crosse	83	1879	Helvetia	86	1878	6 "
Do	La Crosse	73	Madison	82	1879	Fort Crawford	91		26 "
Wyoming	Fort Washakie	71	Cheyenne	80	1874	Fort Laramie	89		27 "

Michigan.—Litchfield: mean temperature 45°.4; month cold; vegetation backward.

Missouri.—The following extract is taken from the report of Professor Francis E. Nipher, Director of the Missouri Weather Service:

The average temperature of April has been 56°.7 at Saint Louis, which is about 0°.5 above the normal of Englemann's series. Since 1837, the mean April temperature has once reached 66°.8—in 1844, and in 1857 it fell to 44°.1—a range of 22°.7. The extremes during the last month have been: lowest, 32°.2 on the 24th; highest, 85°.6 on the 14th, which are very ordinary temperatures. In April, 1857, the lowest temperature recorded was, 18°.0; while in the years 1838, 1843, and 1855, the highest temperature recorded was 93°.

New York.—North Volney: mean temperature 40°.0, is 1°.2 below the April average of sixteen years.

Palermo: mean temperature 38°.5, is 2°.7 below the April average of the last thirty years.

Ohio.—Wauseon: mean temperature 45°.3, or 1° below the average of thirteen years.

Pennsylvania.—Dyberry: mean temperature 41°.4, is 0°.8 below the April average of seventeen years.

Texas.—New Ulm: mean temperature 69°.8, or 1°.2 above the April average of eleven years.

Utah.—Nephi: mean temperature 41°.7, which is below the mean of March, 1883.

Vermont.—Woodstock: mean temperature 38°.0, or 1°.2 below the April average of the last sixteen years.

Virginia.—Variety Mills: mean temperature 52°.9, is 1°.5 below the April average of six years.

West Virginia.—Helvetia: mean temperature 50°.3, or 1°.5 above the April average of seven years.

Washington Territory.—The following temperature record has been forwarded by Mr. J. Straight, of Walla Walla. It shows the monthly extremes and the monthly and annual mean temperatures at Walla Walla from January, 1872, to December, 1882:

Year.	January.			February.			March.			April.			May.			June.			July.			August.			September.			October.			November.			December.			Annual means.
	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	
1872.....	52	0	28.3	65	13	36.1	63	33	51.6	74	30	50.3	87	34	60.7	86	40	65.5	98	49	72.4	95	53	70.0	90	47	61.5	79	27	55.7	63	13	31.0	50	13	28.8	50.9
1873.....	61	23	39.3	51	16	36.0	57	33	47.5	83	34	51.8	83	39	59.7	91	40	68.2	100	57	77.0	95	65	74.0	93	41	63.7	83	27	56.3	71	17	44.8	50	7	22.4	52.9
1874.....	66	13	40.0	55	13	37.2	70	27	43.3	82	33	54.8	87	40	61.1	85	47	65.2	98	56	72.5	95	48	72.2	90	40	60.6	77	27	52.0	55	15	36.4	55	10	35.3	52.1
1875.....	45	29	13.0	57	2	28.0	62	24	44.1	83	20	55.6	76	45	59.1	90	47	65.3	100	54	74.5	98	50	72.5	79	47	63.5	77	47	58.3	68	11	40.1	57	28	45.0	51.6
1876.....	50	0	28.5	72	28	44.1	70	28	44.2	75	32	53.1	82	42	57.8	93	53	73.7	97	62	75.4	92	54	69.2	90	51	64.2	83	41	58.5	65	21	40.4	52	11	28.2	53.1
1877.....	68	8	36.2	67	24	44.7	74	27	50.3	82	42	57.4	82	49	62.3	93	57	67.8	103	58	77.7	98	58	77.0	90	40	61.6	75	26	50.9	59	24	43.7	63	22	35.7	55.5
1878.....	61	20	36.5	61	32	45.5	77	30	52.3	85	30	54.8	89	40	61.9	95	58	70.8	90	52	71.4	91	55	71.9	87	45	59.6	71	26	47.2	68	24	43.7	57	6	30.2	53.8
1879.....	54	3	30.0	61	32	45.8	75	28	50.0	80	32	52.2	86	45	59.0	84	50	63.5	98	52	70.7	87	44	55.7	89	48	64.1	80	22	49.7	57	22	37.9	57	12	33.2	50.2
1880.....	58	20	40.0	54	14	34.7	74	11	41.3	85	30	51.2	88	44	56.0	94	46	65.2	98	48	70.4	92	49	67.7	90	40	61.6	83	30	52.6	66	14	35.0	59	7	27.8	50.3
1881.....	42	5	24.2	64	6	36.1	79	28	51.5	86	33	54.9	85	34	58.8	85	48	63.8	98	50	69.0	94	51	66.4	85	40	61.8	85	22	48.0	62	15	37.1	59	25	38.0	50.6
1882.....	46	3	33.1	53	2	34.7	70	24	42.7	85	35	49.6	86	35	56.9	90	55	68.1	100	53	72.8	104	50	70.6	90	35	61.8	66	32	47.3	57	16	36.3	57	12	39.6	51.1
Means.....	54.7	6.8	31.7	60.0	14.5	37.6	70.1	26.6	47.2	81.3	31.9	53.2	85.2	40.6	59.4	90.6	51.5	66.9	98.2	53.2	73.1	94.9	52.5	69.3	88.5	43.1	61.9	76.3	29.7	51.9	62.9	16.0	38.9	56.0	13.2	33.1	52.0

MONTHLY RANGES OF TEMPERATURE.

The monthly ranges of temperature have varied from 20° at San Francisco, California, and 21° at Key West, Florida, to 71° at Saint Vincent, Minnesota, and 79° at Fort Stevenson, Dakota.

The smallest monthly ranges are: San Francisco, California, 20°; Cape Mendocino, California, 21°; Key West, Florida, 21°; Galveston, Texas, 25°; Punta Rassa, Florida, 26°; Barnegat City, New Jersey, 29°; Indianola, Texas, 29°; Cedar Keys, Florida, 31°; New Orleans, Louisiana, 33°; Brownsville, Texas, 33°; Cape May, New Jersey, 34°; Provincetown, Massachusetts, 34°; Macon, North Carolina, 34°; Block Island and Point Judith, Rhode Island, 35°; Portsmouth, North Carolina, 35°; Savannah, Georgia, 35°; Sanford, Florida, 35°. The largest are: Fort Stevenson, Dakota, 79°; Saint Vincent, Minnesota, 71°; Glendive, Montana, 70°; Phoenix, Arizona, 69°; Erie, Pennsylvania, 68°; Moorhead, Minnesota, 68°; Port Huron, Michigan, 67°; Cleveland, Ohio, 66°; Rochester, New York, 66°; Fort Custer, Montana, 65°; West Las Animas, Colorado, 64°; Graham, Texas, 64°; Fort Buford, Dakota, 64°; Fort Shaw, Montana, 64°; Buffalo, New York, 64°; Alpena, Michigan, 63°; Fort Apache, Arizona, 63°; Fort Elliott, Texas, 62°; Fort Supply, Indian Territory, 61°.

The greatest daily ranges of temperature have varied in the different districts as follows:

New England.—From 20° at Block Island, Rhode Island, on the 26th, to 32° at Boston, Massachusetts, on the 10th.

Middle Atlantic states.—From 17° at Barnegat City, New Jersey, on the 27th, to 31° at Lynchburg, Virginia, on the 19th and 31° at Williamsport, Pennsylvania, on the 30th.

South Atlantic states.—From 19° at Charleston, South Carolina, on the 1st, to 30° at Augusta, Georgia, on the 13th.

Florida peninsula.—From 19° at Key West, on the 24th, to 20° at Cedar Keys, on the 18th and 26th, and 20° at Punta Rassa, on the 4th, 19th and 26th.

Eastern Gulf.—From 19° at New Orleans, Louisiana, on the 17th, to 30° at Mobile, Alabama, on the 26th.

Western Gulf.—From 19° at Galveston, Texas, on the 14th,

to 40° at San Antonio, Texas, on the 16th, and 41° at Fort Smith, Arkansas, on the 16th.

Rio Grande valley.—From 30° at Brownsville, Texas, on the 23d, to 45° at Eagle Pass, Texas, on the 23d.

Ohio valley and Tennessee.—From 27° at Indianapolis, Indiana, on the 4th, to 34° at Knoxville, Tennessee, on the 21st.

Lower lakes.—From 29° at Oswego, New York, on the 9th, to 36° at Toledo, Ohio, on the 14th, and 39° at Buffalo, New York, on the 15th.

Upper lakes.—From 26° at Chicago, Illinois, on the 27th, to 34° at Port Huron, Michigan, on the 14th.

Extreme northwest.—From 33° at Moorhead, Minnesota, on the 27th, to 36° at Fort Stevenson, Dakota, on the 27th.

Upper Mississippi valley.—From 27° at Cairo, Illinois, on the 23d, to 39° at Des Moines, Iowa, on the 16th.

Missouri valley.—From 36° at Huron, Dakota, on the 16th, to 40° at Omaha, Nebraska, and Yankton, Dakota, on the 8th and 16th, respectively.

Northern slope.—From 29° at Helena, Montana, on the 15th, to 44° at Fort Washakie, Wyoming, on the 15th.

Middle slope.—From 30° on the summit of Pike's Peak, Colorado, on the 15th, and 34° at Denver, Colorado, on the 2d and 3d, to 51° at West Las Animas, Colorado, on the 2d.

Southern slope.—From 35° at Jacksboro', Texas, on the 16th, to 44° at Fort Stockton, Texas, on the 17th.

Southern plateau.—From 36° at Santa Fé, New Mexico, on the 15th, to 54° at Fort Apache, Arizona, on the 15th.

Middle plateau.—From 29° at Salt Lake City, Utah, on the 15th, to 33° at Pioche, Nevada, on the 18th.

Northern plateau.—From 34° at Eagle Rock, Idaho, on the 19th, to 36° at Lewiston, Idaho, on the 24th.

North Pacific coast.—From 34° at Roseburg, Oregon, on the 17th and 24th, to 36° at Portland, Oregon, on the 23d.

Middle Pacific coast.—From 16° at San Francisco and Cape Mendocino, California, on the 15th and 18th, respectively, to 34° at Red Bluff, California, on the 20th.

South Pacific coast.—From 33° at Visalia, California, on the 15th, to 40° at Yuma, Arizona, on the 29th.

Table of Maximum and Minimum Temperatures for April, 1883.

State or Territory.	Signal Service.			U. S. Army Post Surgeons, or Voluntary Observers.		
	Station.	Max.	Min.	Station.	Max.	Min.
Alabama.....	Mobile.....	90	47	Mount Vernon Bar-	0	0
Do.....	Montgomery.....	88	41	racks.....	91	44
Arizona.....	Phoenix.....	99	36	Scottsborough.....	87	29
Do.....	Fort Apache.....	78	15	Texas Hill.....	98	50
Arkansas.....	Fort Smith.....	88	37	Mount Ida.....	84	32
Do.....	.....	.....	.....	Texas Hill.....	85	39
California.....	Los Angeles.....	89	36	Kingsburg.....	105	36
Do.....	Visalia.....	81	36	Mammoth Tank.....	100	55
Do.....	Red Bluff.....	79	36	Summit.....	47	16
Do.....	Cape Mendocino.....	57	36	Osceola.....	56	18
Colorado.....	West Las Animas.....	82	16	Fort Lewis.....	64	12
Do.....	Pike's Peak.....	30	-13	Fort Garland.....	64	10
Do.....	Denver.....	73	22	Fort Lyon.....	80	22
Connecticut.....	New London.....	60	21	Southington.....	69	25
Do.....	New Haven.....	64	22	Fort Pembina.....	67	-3
Dakota.....	Huron.....	79	24	Fort Sully.....	83	23
Do.....	Fort Stevenson.....	74	-5	Rock Creek Bridge	78	31
Delaware.....	Del. Breakwater.....	67	31	West Washington.....	79	25
District of Columbia.....	Washington.....	76	26	Limona.....	97	40
Do.....	.....	.....	.....	Waldo.....	93	48
Florida.....	Cedar Keys.....	90	66	Live Oak.....	92	42
Do.....	Sanford.....	90	53	Covington.....	89	41
Do.....	Pensacola.....	87	49	Toccoa.....	88	32
Georgia.....	Atlanta.....	83	30	Banker Hill.....	87	26
Do.....	Augusta.....	87	42	Polo.....	79	23
Idaho.....	Lewiston.....	74	33	Hanover.....	86	33
Do.....	Eagle Rock.....	64	20	DeGonia Springs.....	80	30
Illinois.....	Springfield.....	85	30	Bluffton.....	82	23
Do.....	Chicago.....	78	28	Martinsville.....	87	23
Indiana.....	Indianapolis.....	85	30	Indianola.....	90	30
Do.....	.....	.....	.....	Cedar Rapids.....	78	25
Indian Territory.....	Fort Reno.....	91	33	Clay Centre.....	95	29
Do.....	Fort Supply.....	90	29	Wellington.....	91	25
Iowa.....	Des Moines.....	89	29	Frankfort.....	85	31
Do.....	Dubuque.....	86	26	New Iberia.....	97	45
Kansas.....	Leavenworth.....	86	33	Amite City.....	89	40
Do.....	.....	.....	.....	Gardiner.....	65	14
Kentucky.....	Louisville.....	88	35	Dexter.....	64	12
Louisiana.....	Shreveport.....	92	46	Sandy Springs.....	77	22
Do.....	New Orleans.....	84	51	Erasmussburg.....	72	22
Maine.....	Portland.....	66	22	Westborough.....	72	20
Do.....	Eastport.....	66	17	Heath.....	63	10
Maryland.....	Baltimore.....	74	30	Swartz Creek.....	87	20
Do.....	Ocean City.....	74	28	Traverse City.....	78	5
Massachusetts.....	Boston.....	74	22	Northfield.....	75	22
Do.....	Provincetown.....	60	20	Fort Snelling.....	79	12
Michigan.....	Port Huron.....	81	18	Hernando.....	89	38
Do.....	Alpena.....	65	2	Meridian.....	91	40
Do.....	Escanaba.....	50	2	Glasgow.....	93	22
Minnesota.....	Saint Paul.....	74	19	Centerville.....	.....	.....
Do.....	Moorhead.....	74	6	De Soto.....	95	30
Do.....	Saint Vincent.....	67	-4	Fort Niobrara.....	89	9
Mississippi.....	Vicksburg.....	80	44	Hot Springs.....	78	21
Do.....	Starkville.....	85	40	Boca.....	66	15
Missouri.....	Saint Louis.....	88	32	Bristol.....	62	14
Do.....	.....	.....	.....	Grafton.....	60	9
Montana.....	Glendive.....	82	12	Vineland.....	80	25
Do.....	Fort Shaw.....	68	4	Freehold.....	71	24
Nebraska.....	Omaha.....	88	32	Lordsburg.....	84	41
Do.....	North Platte.....	79	21	Fort Union.....	75	9
Nevada.....	Pioche.....	68	17	Plattsburg Bar's.....	54	8
Do.....	.....	.....	.....	Johnstown.....	95	1
New Hampshire.....	Mt. Washington.....	50	-10	Goldsboro.....	85	38
Do.....	.....	.....	.....	Weldon.....	83	31
New Jersey.....	Little Egg Harbor.....	69	29	Portsmouth.....	95	34
Do.....	Sandy Hook.....	68	27	Wauseon.....	84	18
New Mexico.....	Fort Bayard.....	75	25	Albany.....	74	38
Do.....	Santa Fe.....	69	19	Fort Klamath.....	66	12
New York.....	Rochester.....	84	18	Dyberry.....	68	11
Do.....	Oswego.....	76	16	Bloomington.....	69	16
North Carolina.....	Sloop Point.....	84	35	Grampian Hills.....	79	16
Do.....	Charlotte.....	82	34	Georges.....	89	37
Ohio.....	Columbus.....	86	20	Florence.....	87	20
Do.....	Cleveland.....	85	19	Austin.....	90	31
Oregon.....	Portland.....	74	36	Paris.....	87	28
Do.....	.....	.....	.....	Hearne.....	88	29
Pennsylvania.....	Erie.....	86	18	Ogden.....	78	28
Do.....	Pittsburg.....	86	20	Nephi.....	71	22
Do.....	Williamsport.....	73	23	Woodstock.....	72	0.4
Rhode Island.....	Narragansett Pier.....	66	23	Lunenburg.....	66	2
South Carolina.....	Charleston.....	82	45	Marion.....	83	32
Do.....	.....	.....	.....	Variety Mills.....	79	27
Tennessee.....	Memphis.....	88	39	Fort Canby.....	69	34
Do.....	Nashville.....	88	35	Helvetia.....	86	30
Do.....	Knoxville.....	86	33	Beloit.....	81	21
Texas.....	Eagle Pass.....	101	43	Ripon.....	77	12
Do.....	Rio Grande City.....	101	52	Fort Bridger.....	64	-15
Do.....	Fort Elliott.....	90	28	.....	.....	.....
Utah.....	Salt Lake City.....	72	28	.....	.....	.....
Do.....	.....	.....	.....	.....	.....	.....
Vermont.....	.....	.....	.....	.....	.....	.....
Do.....	.....	.....	.....	.....	.....	.....
Virginia.....	Norfolk.....	80	37	.....	.....	.....
Do.....	Fort Myer.....	77	22	.....	.....	.....
Washington.....	Dayton.....	74	31	.....	.....	.....
Do.....	Pomeroy.....	72	29	.....	.....	.....
West Virginia.....	.....	.....	.....	.....	.....	.....
Wisconsin.....	Milwaukee.....	75	23	.....	.....	.....
Do.....	La Crosse.....	73	21	.....	.....	.....
Wyoming.....	Fort Washakie.....	71	11	.....	.....	.....

FROSTS.

In the various districts they were reported on the following dates:

New England.—1st to 5th, 7th to 12th, 14th to 16th, 18th to 30th.

Middle Atlantic states.—1st to 4th, 7th to 9th, 12th, 13th, 16th, 18th, 29th, 21st to 30th.

South Atlantic states.—1st to 4th, 25th, 26th.

Tennessee.—3d, 4th, 17th, 25th, 26th, 30th.

Ohio valley.—1st to 5th, 8th, 9th, 16th, 17th, 20th, 21st, 23d to 26th, 28th to 30th.

Lower lakes.—1st to 4th, 6th to 13th, 16th, 17th, 20th to 30th.

Upper lakes.—1st to 12th, 14th, 16th to 30th.

Extreme northwest.—1st to 13th, 16th to 20th, 23d to 30th.

Missouri valley.—1st to 8th, 11th, 12th, 15th, 16th, 19th, 23d to 30th.

Northern slope.—1st to 7th, 9th to 16th, 19th, 21st to 31st.

Middle slope.—1st to 3d, 5th to 8th, 10th to 12th, 14th, 15th, 17th, 18th, 21st to 26th, 29th, 30th.

Southern plateau.—1st, 2d, 5th to 8th, 13th to 16th, 19th to 24th, 26th to 28th.

Middle plateau.—1st to 7th, 9th, 10th, 12th to 15th, 18th to 28th.

Northern plateau.—4th, 5th, 11th, 13th, 14th, 21st.

North Pacific.—6th, 10th, 12th to 14th, 16th, 24th to 26th.

Middle Pacific.—1st, 13th to 15th, 17th, 21st to 23d, 25th, 26th.

South Pacific.—Los Angeles, 14; Visalia, 13th, 14th; Poway, 14th, 15th, 25th.

Frosts were also reported in the following states, not included in the above:

New Hampshire.—Mount Washington, 1st to 15th, 18th to 30th.

Texas.—Fort Davis, 6th, 7th, 8th, 29th.

Alabama.—Green Springs, 25th, 26th; Auburn, 30th.

Arkansas.—Fort Smith, 2d, 16th; Mount Ida, 3d, 7th, 8th, 16th; Texas Hill, 2d, 3d, 7th, 8th, 16th, 25th.

The following reports, concerning injury to the vegetation by frosts, have been received:

Fort Verde, Arizona, 14th.—Very heavy frost occurred this morning, destroying all garden vegetables.

Wickenburg, Arizona, 16th.—All vegetables and nearly all of the fruit have been killed by the frost of this date. The temperature fell 28°. The Alfalfa grass crop, which was nearly ready for mowing, was badly damaged.

Springfield, Illinois, 24th.—The frost of this date caused much damage to vegetation in the surrounding country.

Memphis, Tennessee, 25th.—Garden vegetables were injured by the frost of this date.

Baltimore, Maryland, 26th.—A very heavy frost occurred on this date, but owing the backwardness of the season but little damage resulted.

Petersburg, Virginia, 25th.—A severe frost occurred in this vicinity last night. Ice formed to a thickness of one-half inch. Fears are entertained for the safety of the fruit crop.

Wilmington, Delaware, 24th.—Reports from various points in this state and from the eastern shore of Maryland, state that the peach crop has suffered no material injury from the recent frosts.

Raleigh, North Carolina, 25th.—A heavy frost occurred throughout this section last night. It is feared that much damage will result to the tobacco plants.

Reading, Pennsylvania, 25th.—It is feared that the fruit crop in this section was seriously injured by the heavy frost of last night.

Pittsburg, Pennsylvania, 30th.—The farmers from the surrounding country report that early vegetables and fruit were nearly all killed by heavy frost of this date.

ICE.

Ice formed in the various states and territories as follows: *Arizona.*—Tucson, 14th.

California.—Salinas City, 15th.
Illinois.—Elmira, 20th, 29th; Rockford, 29th; Swanwick, 24th.
Indiana.—Indianapolis, 24th; Wabash, 20th, 21st, 24th, 25th, 29th, 30th; Laconia, 25th, 30th.
Iowa.—Cedar Rapids, 24th; Dubuque, 24th; Humboldt, 23d; Muscatine, 29th.
Kansas.—Holton, 23d; Pretty Prairie, 6th, 7th, 19th, 25th.
Maine.—Bangor, 21st, 22d; Portland, 21st.
Minnesota.—Saint Paul, 23d.
Nebraska.—Clear Creek, 6th, 11th, 26th; Genoa, 16th, 19th, 24th.
New Jersey.—Freehold, 25th, 26th.
New Mexico.—Santa Fé, 5th, 6th, 7th, 13th to 16th, 22d, 23d, 24th, 27th, 28th.
New York.—Buffalo, 30th; Friendship, 24th; Flushing, 25th, 26th; Kiantone, 23d.
Ohio.—Bethel, 24th, Cincinnati, 24th; Columbus, 24th; Margaretta, 24th, 29th; North Lewisburg, 24th, 25th.
Pennsylvania.—Catawissa, 25th, 26th, 27th; Chambersburg, 21st, 26th; Franklin, 25th, 26th; Pittsburg, 24th; West Chester, 25th.
Rhode Island.—Narragansett Pier, 26th.
Texas.—Fort Davis, 13th, 16th.
Virginia.—Johnsontown, 4th, 25th; Marion, 25th; Norfolk, 25th.
Wisconsin.—La Crosse, 23d.

PRECIPITATION.

[Expressed in inches.]

The distribution of rainfall over the United States and Canada, as determined from observations taken at more than six hundred stations, is exhibited on chart iv.

In the first column of the following table is given the average April rainfall in the various districts for several years; in the second column is given the average for April, 1883; and the third column shows the excess or deficiency of April, 1883, as compared with the average of previous years:

Average precipitation for April, 1883.

Districts.	Average for April. Signal-Service observations.		Comparison of April, 1883, with the average for several years.
	For several years.	For 1883.	
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
New England.....	3.79	2.78	1.01 deficiency.
Middle Atlantic states.....	3.50	4.54	1.04 excess.
South Atlantic states.....	4.57	6.50	1.93 excess.
Florida peninsula.....	3.03	2.96	0.07 deficiency.
Eastern Gulf.....	5.54	8.30	2.76 excess.
Western Gulf.....	4.48	5.25	0.77 excess.
Rio Grande valley.....	1.25	1.08	0.17 deficiency.
Tennessee.....	5.74	7.12	1.38 excess.
Ohio valley.....	3.60	4.21	0.61 excess.
Lower lakes.....	2.20	2.00	0.20 deficiency.
Upper lakes.....	2.27	1.74	0.53 deficiency.
Extreme northwest.....	1.67	1.26	0.41 deficiency.
Upper Mississippi valley.....	2.96	3.50	0.54 excess.
Missouri valley.....	2.91	3.17	0.26 excess.
Northern slope.....	1.17	1.60	0.43 excess.
Middle slope.....	1.18	1.96	0.78 excess.
Southern slope.....	1.12	0.85	0.27 deficiency.
Northern plateau.....	2.46	1.17	1.29 deficiency.
Middle plateau.....	1.72	2.03	0.31 excess.
Southern plateau.....	0.40	0.16	0.24 deficiency.
North Pacific.....	3.02	7.18	4.16 excess.
Middle Pacific.....	2.22	1.38	0.84 deficiency.
South Pacific.....	0.87	0.56	0.31 deficiency.
Mount Washington, N. H.....	4.18	6.21	2.03 excess.
Pike's Peak, Colo.....	3.87	1.68	2.19 deficiency.

Over the northern part of the country from the northern plateau to New England, in Florida, California, and over the southern part of the country from Arizona to western Texas, the rainfall of the month has been below the average of April. The departures in these districts are, in general, small, being less than 1.00, except in New England and the northern plateau. In all other districts the rainfall has been above the average, the area of excess embracing a large extent of country from the Atlantic and Gulf coasts westward beyond the

Rocky mountains, and to the north Pacific coast. The heaviest rains of the month occurred in the north Pacific coast region and east Gulf states, where the departures from the average are 4.16 and 2.76, respectively. Large excesses also occurred in the south Atlantic states and Tennessee. At Olympia, Washington Territory, in the north Pacific coast region, the rainfall for the month was 7.72 above the April average of the five preceding years, while at Roseburg, Oregon, there was a slight deficiency.

The general distribution of rainfall during the month of April, since 1873, and the districts of maximum departures of each year from the April normal, are as follows:

Year.	Districts.	Maximum departures from nor- mal.	Remarks.
1873...	Illinois and Missouri..... Western Gulf.....	+ 3.06 + 3.87	Excessive over southern New England, the lower lake region, and from Indiana and southern Michigan to Iowa and southern Minnesota; deficient elsewhere east of the Rocky mountains.
1874...	Tennessee..... Western Gulf..... Eastern Gulf..... Upper lakes..... Minnesota.....	+ 8.90 + 6.90 + 5.30 + 2.20 - 1.20	Large excesses from New England southwestward to the west Gulf states, resulting in disastrous floods in the lower Mississippi river. At Vicksburg, Mississippi, over sixteen inches fell in four days. The snowfall in New England was unusually heavy. From the lower lake region westward the rainfall was below the average.
1875...	Ohio valley..... Lower lakes..... South Atlantic states..... Eastern Gulf.....	- 1.72 - 1.34 + 1.70 + 1.38	Deficient from the Ohio valley to the upper lake region and Saint Lawrence valley; excessive from the middle Atlantic to the west Gulf states, in Minnesota and the Missouri valley; normal in the upper Mississippi valley and in New England. At Fort Gibson, Indian Territory, 4.50 inches fell on the 30th.
1876...	South Atlantic states..... Eastern Gulf..... Upper Mississippi valley..... Ohio valley..... Lower lakes.....	+ 2.35 + 1.50 + 1.35 - 1.05 - 0.65	Excessive in New England, from the south Atlantic to the west Gulf states, and in the upper Mississippi and Missouri valleys; deficient in the Ohio valley, lower lake region, and from Minnesota eastward to the Saint Lawrence valley, and also in the middle Atlantic states.
1877...	South Atlantic states..... Tennessee..... Eastern Gulf..... Missouri valley..... Ohio valley..... San Francisco, California.....	+ 5.65 + 5.75 + 2.50 + 2.20 - 0.85 - 1.54	Deficient on the Pacific coast, in the lower lake region and Ohio valley; above the average in all other districts, being largely in excess in Tennessee and the south Atlantic states, where the rainfall was more than twice the normal value.
1878...	Tennessee..... South Atlantic states..... Minnesota..... Upper Missouri valley..... Middle Atlantic states..... Ohio valley.....	+ 2.80 + 2.61 + 3.89 + 2.34 + 0.39 - 0.23	Deficient in the Ohio valley, middle Atlantic states, and at Portland, Oregon; excessive in all other districts, the departures being large in Minnesota, the upper Missouri valley, in Tennessee, and in the south Atlantic states.
1879...	South Atlantic states..... Western Gulf..... Ohio valley..... Upper Mississippi valley..... Upper Missouri valley.....	+ 2.78 + 2.60 - 1.65 - 1.62 - 1.60	Excessive in New England and in the south Atlantic and Gulf states; deficient in all other districts, except normal in California.
1880...	Saint Lawrence valley..... Ohio valley..... Upper lakes..... Middle Pacific coast..... South Atlantic states..... Florida.....	+ 2.43 + 1.55 + 1.49 + 7.87 - 1.99 - 1.57	Deficient in the Missouri valley, Tennessee, and from New England to the east Gulf states; excessive in the west Gulf states, the lake region, in the upper Mississippi, Ohio, and Saint Lawrence valleys, and on the Pacific coast. On the middle Pacific coast the rainfall was about five times as great as the normal value.
1881...	Upper Mississippi valley..... New England..... Middle Atlantic states..... Western Gulf..... Middle Pacific coast..... North Pacific coast..... Florida.....	- 1.58 - 2.34 - 1.95 - 1.93 - 1.93 + 0.64 + 0.30	Deficient in all parts of the country, except slight excesses in Florida and in the north Pacific coast region.
1882...	North Pacific coast..... Extreme northwest..... Upper lakes..... Tennessee..... Western Gulf..... New England.....	+ 2.09 + 0.70 + 0.70 - 2.05 - 1.73 - 1.19	Excessive from the lower lake region westward to the Rocky mountains, in the north Pacific coast region, middle plateau, and in Florida; deficient in all other districts, except a very slight excess in the east Gulf states.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average precipitation for April, 1883. The Chief Signal Officer is indebted to the voluntary observers for the following notes upon this subject. As some of these comparisons are made with